8/12/05-00908

CH2M HILL
Westmoreland Building
5700 Cleveland Street
Suite 101
Virginia Beach. VA 23462
Te1757.518.9666
Fax 757.497.6885

CH2MHILL

August 12,2005

Ms. Maria Pino
NPL/BRAC
Federal Facilities Branch (3HS11)
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Response to Comments, *Draft Remedial Investigation, Human Health Risk Assessment, Ecological Risk Assessment, SWMU 3,* Naval Amphibious Base Little Creek, Virginia Beach, Virginia

Dear Ms. Cooke:

On behalf of the Navy, CH2M HILL has prepared the following responses to comments received from USEPA on the *Draft Remedial Investigation, Human Health Risk Assessment, Ecological Risk Assessment, SWMU 3,* Naval Amphibious Base Little Creek, Virginia Beach, Virginia:

Ecological Risk Assessment:

Comment #1: There are a number of places in this document where the terms risk and screening values are used without specificity to either human health or ecological risk. In all cases, the document needs to clearly indicate which receptor (humans or ecological) these terms like risk and screening values apply.

Response: The text, tables, and figures will be revised accordingly.

Comment #2: On page 2-6, the text indicates the potential risks to upper trophic level ecological receptors were considered low, as only iron and zinc exceeded a LOAEL based screening value for piscivoms birds. The text should clear explain why the risk is characterized as low. The facts presented do not support this characterization.

Response: Section 2 discusses previous investigations at the site. The conclusions of the screening ERA in 2001 have been revised based on the 2002 RI investigations at the site.

Comment #3: On page 8-20, the text indicates mean concentrations are also appropriate for evaluating potential risks to populations of lower trophic level receptors. The use of central tendency estimates is a valid approach to help characterize risk. It cannot be solely used to eliminate contaminants from further consideration. Reasonable maximum exposure concentrations (and doses) must be considered as well.

Response: The text will be revised accordingly.

Comment #4: Section 8.6.1, Recommendations, on page 8-31 states that the presence of sandblast grit residues in terrestrial areas is a potential continuing source of contaminants to Little Creek Harbor, and it is recommended that these residues be removed to eliminate this transport pathway. BTAG concurs with this recommendation. The document does not clearly establish that metal contamination in soil is solely associated with the ABM residue. The document should clearly indicate if other areas of metal contamination in soil are present that are not associated with the presence of sandblast grit residue. BTAG also supports the recommendation that the ecological risk assessment for sediment at the site proceed to Step 4 to better quantify the potential risk.

Response: Comment noted. A supplemental RI is planned for SWMU 3 to further quantify Human Health and Ecological risks at the site.

Hydrogeological

Comment #1: EPA concurs with the recommendation that additional sampling and delineation of the groundwater contamination at SWMU 3. An assessment of potential sources must be performed.

Response: Additional sampling is scoped for SWMU 3 and will potentially include further groundwater investigation. Potential sources of contamination will be assessed before additional sampling locations are determined.

Toxicological

Comment #1: PAGE V - In addition to soil, surface water and sediment, groundwater was also sampled at SWMU 3 during the Remedial Investigation. This point should be noted in the Executive Summary of the report.

Response: The suggested changes will be incorporated into the text.

Comment #2: PAGE IX - When target organs are considered, only a marginal non-cancer risk is associated with exposure to soil by future residential children. For these receptors, the soil Hazard Index (HI) for the gastrointestinal tract is 1.1, due to the cumulative effects of beryllium (HI = 0.11), copper (HI = 0.35) and iron (HI = 0.67). Since the greatest contributor to the soil HI is iron, and since the provisional RfD for this metal is not currently supported by EPA - NCEA, this pathway does not constitute a direct contact threat at the site. The text and tables throughout the report should be revised to reflect this.

Thallium is listed as a Contaminant of Potential Concern (CoPC) in groundwater. However, this compound is often an artifact of the method employed for sample analysis. A chemist should be consulted to determine if the thallium detections at this site are reliable, and the report should be modified, as necessary.

Response: The Navy and USEPA have agreed on RfD values used in the risk assessments. Thallium in groundwater will be reviewed by a project chemist and additional samples may be collected during Phase II investigations to confirm concentrations by ICP-MS.

Comment #3: PAGE 7-3 - For TCE, the Carcinogenic Slope Factors (CSFs) presented in the draft TCE Health Risk Assessment (U.S. EPA, August 2001) -- that is, 4E-01 (mg/kg/d)-1 to 2E-02 (mg/kg/d)-1 -- should be used to estimate potential risks related to this compound. Text and tables in the report should be revised accordingly.

Response: Current Navy policy dictates the 2001 **TCE** toxicity values will not be used to evaluate TCE risk. As such, the suggested changes have not been incorporated in HHRA tables or text. However, the TCE RBCs in the current Region **III RBC** Table (April, **2005),** will be used in the HHRA to determine if TCE is a COPC.

Comment#4: PAGE 9-4 - With up to 21 ug/L in the Upper Aquifer, the excess cancer risk to future residential receptors from vinyl chloride in groundwater is 1.7E-04. This compound should be identified as a risk driver in Section 9.5.2. (Note that the MCL for vinyl chloride is 2 ug/L.)

Arsenic was detected in groundwater at the site at up to 25 ug/L, with a 95th percent UCL concentration of 13 ug/L. However, Section 9.5.2 indicates that arsenic does not appear to be site-related because measured concentrations are similar to background conditions. As stated during previous reviews of sites at this facility, EPA is not convinced that background estimates for arsenic in groundwater are truly representative. It is our opinion that arsenic in groundwater at SWMU 3 should not be ignored based simply on a comparison to background. (Note that the MCL for arsenic is 10 ug/L.)

As an aside, Table 2-5 in Appendix H summarizes analytical data from the investigation. This table also has a column for background concentrations of chemicals; however, background values are not provided. There's probably a good reason for this, but EPA just want to make sure that this was not an inadvertent omission.

Response: Vinyl chloride will be added in Section 9.5.2 as a risk driver. It was included in Section 9.3 as a risk driver, but was mistakenly omitted from Section **9.5.2.** The revised arsenic background UTL based on the Summer 2001 addendum is 4 **ug/l.** The text tables and figures will be revised accordingly. Table 2s in the risk assessment process do not take into account background **UTLs.** It is only at the conclusion of the risk assessment process that background concentrations may be used to risk manage potential contaminants of concern.

Comment #5: APPENDIX H, TABLE 3.1 RME - The Integrated Uptake Biokinetic (IEUBK) Model requires use of an *arithmetic mean* soil lead concentration to estimate blood-lead (PbB) levels in residential children. However, this table indicates that for surface soil, the transformed mean (133 mglkg), rather than the arithmetic mean (426 mg/kg), was used to represent an Exposure Point Concentration (EPC). This should be corrected, and the IEUBK Model should be run, as appropriate. (Note that the arithmetic mean is an unbiased estimator of the mean of a population, regardless of the underlying distribution of that population.)

Response: The suggested changes will be incorporated into the HHRA tables and text. The **EPC** will be analyzed using the appropriate lead model, and the results included in the report.

Comment #6: APPENDIX H, TABLE 3.2 RME - The IEUBK Model requires use of an *arithmetic mean* soil lead concentration to estimate PbB levels in residential children. However, this table indicates that for total soil, the transformed mean (19 mglkg), rather than the arithmetic mean (181 mg/kg), was used to

represent an EPC. This should be corrected, although conclusions for lead in total soil will not be impacted.

Response: The suggested changes will be incorporated into the text and tables. The IEUBK and Adult Lead Models will be run, as appropriate, and the results included in the report.

Comment #7: APPENDIX H, TABLE 3.3 RME - The IEUBK Model requires use of an *arithmetic mean* soil lead concentration to estimate PbB levels in residential children. However, this table indicates that for surface sediment, the transformed mean (230 mglkg), rather than the arithmetic mean (436 mglkg), was used to represent an EPC. This should be corrected in the table, although this point is moot since the IEUBK Model is not designed to evaluate adverse impacts associated with lead in sediment.

Response: The suggested changes will be incorporated into the HHRA text and tables accordingly.

Comment #8: APPENDIX H, TABLE 3.4 RME - The IEUBK Model requires use of an *arithmetic mean* soil lead concentration to estimate PbB levels in residential children. However, this table indicates that for total sediment, the transformed mean (96 mglkg), rather than the arithmetic mean (269 mg/kg), was used to represent an EPC. This should be corrected in the table, although this point is moot since the IEUBK Model is not designed to evaluate adverse impacts associated with lead in sediment.

Response: The suggested changes will be incorporated into the HHRA text and tables.

Comment #9: APPENDIX H, TABLE 3.1 - 3.7 CT - EPCs in these tables sometimes represent the arithmetic mean, the transformed mean, the 95th percent UCL, or the maximum. This apparent lack of consistency in CT EPCs should be reviewed for accuracy.

Response: The CT EPCs, arithmetic mean or mean based on lognormal distribution (Minimum Variance Unbiased Estimate of the Mean based on Log-Normal Distribution) are selected based on the distribution of the data. The CT EPCs will be reviewed for accuracy, and changed if necessary.

Comment #10: APPENDIX H, TABLE 3.1 CT - The arithmetic mean for lead in surface soil is given to be 133 mglkg. The transformed mean is also given to be 133 mglkg. Please check this calculation for accuracy.

Response: The arithmetic mean concentration for lead **will** be corrected to 426 **mg/kg.** The transformed mean will not be included on the table.

Comment #11: APPENDIX H, TABLE 3.2 CT - The arithmetic mean for lead in total soil is 181 mglkg. The transformed 95th percent UCL is 19.1 mglkg. This latter value was used to represent the EPC. As noted in previous comments, the arithmetic mean should be the EPC for lead in soil.

Response: The arithmetic mean will be used as the EPC for lead in soil.

Comment #12: APPENDIX H, TABLE 3.3 CT - The IEUBK Model requires use of an *arithmetic mean* soil lead concentration to estimate PbB levels in residential children. However, this table indicates that for surface sediment, the transformed mean (30 mg/kg), rather than the arithmetic mean (436 mg/kg), was used to represent an EPC. This should be corrected in the table, although this point is moot since the IEUBK Model is not designed to evaluate adverse impacts associated with lead in sediment.

Response: The arithmetic mean will be included as the EPC for lead.

Comment #13: APPENDIX H, TABLE 3.4 CT - The IEUBK Model requires use of an *arithmetic mean* soil lead concentration to estimate PbB levels in residential children. However, this table indicates that for total sediment, the transformed mean (96 mg/kg), rather than the arithmetic mean (269 mg/kg), was used to represent an EPC. This should be corrected in the table, although this point is moot since the IEUBK Model is not designed to evaluate adverse impacts associated with lead in sediment.

Response: The arithmetic mean will be included as the EPC for lead.

Comment #14: APPENDIX H, TABLE 3.6 CT - For 1,2-dichloroethane and chloroform, the EPCs (1.8 ug/L and 0.67 ug/L, respectively) are greater than the maximum detected concentrations (1.5 ug/L and 0.64 ug/L, respectively).

Response: The EPCs will be corrected.

Comment #15: APPENDIX H, TABLE 3.7 RME - This table is mislabeled. It should read, "Table 3.7 CT," not "Table 3.7 RME."

Response: Table will be re-labeled to Table **3.7.CT**

Comment #16: APPENDIX H, TABLE 5.1 - The oral Reference Dose (RfD) for TCE is 3E-04 mg/kg/d, not 6E-03 mg/kg/d.

Response: As noted in comment response 3, Navy policy dictates the 2001 TCE toxicity values will not be used to evaluate TCE risk As such, the suggested changes have not been incorporated in HHRA tables or text. However, the TCE **RBCs** in the current Region **III RBC** Table (April, **2005),** will be used in the HHRA to determine if TCE is a COPC.

Comment #17: APPENDIX H, TABLE 5.2 - The inhalation RfD for TCE is 1E-02 mg/kg/d.

Response: As noted in comment response 3, Navy policy dictates the 2001 TCE toxicity values will not be used to evaluate TCE risk. As such, the suggested changes have not been incorporated in HHRA tables or text. However, the TCE **RBCs** in the current Region **III RBC** Table (April, **2005),** will be used in the HHRA to determine if TCE is a COPC.

If you have any questions concerning these comments, please give me a call at (757) 518-9666.

Jamie Butler,
Project Manager

cc: Mr. Paul Herman/VDEQ
Mr. Robert Schirmer/NAVFAC Mid Atlantic